



Six Months of the Berkeley, California Sugar Sweetened Beverage Tax: Effects on Grocery Store Prices, Sales and Revenue

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Purpose: To assess the **impact of a one cent per ounce tax on sugar sweetened beverages (SSBs)** implemented in Berkeley, CA in March of 2015 on **SSB prices, sales, and grocery bills**.

Methods:

Prices: Pass-through of the tax to the prices of beverages was measured in two ways. **Store Price Surveys** described here were conducted in December 2014 (pre-tax) and June 2015 (4 months post-tax) with large distributors, pre- implementation in "self-distributors") among a sample of 26 large supermarkets; small chain supermarkets, chain and independent gas stations, pharmacies, independent corner stores and gas stations located in Berkeley, CA, for a standard panel of 70 beverages, using matched pairs. **Point-of-sales electronic scanner data on all transactions was collected** from two chains of large supermarkets with three of the city's nine large groceries providing electronic data. This presentation covers preliminary data from January 1, 2013 through August 30, 2015 (26 months pre-tax; 6 months post-tax). Chains also provided data on six Bay area control stores. **Preliminary data covered 7,636,816 million checkout episodes.** Prices were calculated in comparison to counterfactuals generated based on pre-tax trends, using a fixed effects model.

Sales: Adjusted average daily sales for taxed and untaxed beverages (ounces), in and out of Berkeley were calculated using the **point of sales** database described above, and compared to the counterfactual based on pre-tax trend.

Grocery Bills (Average revenue per transaction): These were calculated at the store-day level as average daily revenue per transaction from all sales (including food, non-edibles, etc.) and compared to a counterfactual projection.

Results:

Tax Pass Through to SSB Prices:

In the **26 store survey** at 4 months we found **full pass through or greater** in large chain supermarkets at + 1.31 ¢/oz and small chain supermarkets and chain gas stations at + 2.20 ¢/oz. There was **partial pass through** in chain pharmacies at +0.90 ¢/oz and **no pass through** in independent small markets and gas stations (-0.09 ¢/oz), noting that this was before implementation with smaller self-distributors in January 2016.

In the 6 month **point-of sales data**, **unweighted tax pass through was 0.7 ¢/oz** for taxed products ($p < 0.001$) with non-significant change for untaxed products. The **sodas & energy drinks group showed complete pass through at 1.04 ¢/oz** by Spring 2015; pass through was less complete for taxed fruit drinks, sports drinks, flavored waters, RTD teas, fruit & vegetable juices group at 0.5 ¢/oz. **The degree of pass through varied by package size** and was most pronounced among smallest package sized items.

Beverage Sales:

- Sales of **taxed** beverages fell by -8.5% ($p < 0.001$) in relation to counterfactual in Berkeley
- Sales of **untaxed** beverages rose significantly by 2.4% in relation to counterfactual in Berkeley, and by +0.6% in non-Berkeley stores.

- People in Berkeley purchased less in absolute volume of both taxed & untaxed beverages per transaction than non-Berkeley stores, before and after the tax.
- Sales of taxed beverages rose by +6.6% in non-Berkeley stores. Sales rose in neighboring stores and fell in distant ones.
- There was **no decline in overall beverage sales in Berkeley** in relation to the counterfactual post tax, there was a slight increase in neighboring stores, and slight decline further away.

Grocery Bills

- **Average grocery bills (revenue per transaction) did not increase in the two chains studied**
- There was a small statistically significant reduction in revenue per transaction in both Berkeley & non-Berkeley stores
- Reductions in revenue per transaction in Berkeley stores were less than the reductions in non-Berkeley stores (by \$0.19/transaction).

Revenue to the City and Use:

Even in this very low SSB consuming city, in the early months of the tax, prior to full implementation with small self-distributors, tax revenue was \$1 per capita per month, or \$12 per capita per year, 4 times the per capita annual amount in the US Federal Prevention and Public Health Fund. This additional revenue to the general fund is going to nutrition and obesity prevention activities in schools, childcare and other community settings

Conclusion:

In the first 6 months of the nation's first large soda tax, despite low baseline sales, sales of taxed SSBs in the studied chains declined by - 8.5%, sales of untaxed beverages rose 2.4%, overall beverage sales remained constant, average grocery bills did not increase, and store revenue per transaction did not decline more in Berkeley. Increases in sales of taxed beverages in nearby stores suggests the possibility of some "leakage." The tax raised revenue used for public health interventions at \$12 per capita per year in this low consuming city.

Bay Area Update:

Similar taxes are on the ballot in Oakland, San Francisco and Albany, CA this month. A proposed state tax has failed several times in the state legislature. Industry has intensified spending. Additional research by Falbe *et al* (AJPH 2015 & 2016) had similar findings on price and found a 21% decline in self-reported SSB consumption in street intercepts in Berkeley low-income neighborhoods, a small rise in SSB consumption in comparison cities and a large increase in reported water consumption.

Observations on the campaign:

This successful measure's campaign was characterized by a broad community coalition, early engagement and endorsement a wide range of organizations and by key community leaders of all races, before the industry could "buy" them over. Strong grassroots campaigning door to door, direct mail and phone banking were used, and TV ads were added at the end. Strong, clear messaging focusing on children, health effects and revenue was employed.